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Faithful representation as an 'objective mirage': A Saussurean analysis of accounting and its participation in the financial crisis

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ABSTRACT

This paper takes as its starting point the claims of critics that fair value was an active participant in the dynamics of the financial crisis, and then sets out to explore this participation through drawing on the works of Saussure and Derrida. For Saussure, the relation between sign and referent is always 'arbitrary' and, as applied to accounting signification, suggests the impossibility of the seemingly realist ambition of standard setters for accounting to simply 'faithfully represent' independently existing 'economic phenomena'. Instead, for Saussure and Derrida, meaning is purely differential and relational and arises only in the play of difference between signs over time. Following their views on the nature of signification, our account begins with a description of the complex credit derivatives whose rapid shift from profit to loss under fair value triggered the financial crisis. We then explore accounting's participation in the crisis along three dimensions: the collapse of difference between accounting signs that characterised derivatives' initial construction as profitable, and their later valuation using the ABX.HE index; the self-interested neglect of how fair value accounting signs would interact over time with accounting dependent remuneration practices, credit ratings, and capital adequacy rules; and the introduction of new sources of heterogeneity to accounting in the application of the fair value measurement hierarchy. The paper concludes by suggesting that, in allowing the recognition in the present of values derived from inherently uncertain forward estimates, fair value accounting made possible not the management of risk, but its exploitation.

1. Introduction

While analysis of the causes of this crisis is still underway, some believe that fair value accounting standards have contributed to or exacerbated this crisis, arguing that use of fair value accounting, particularly when markets are illiquid, has resulted in the valuing of assets well below their "true economic value." Opponents of fair value accounting also argue that these write-downs have caused a downward spiral, as they have triggered margin and regulatory capital calls, "have forced rapid asset liquidation, exacerbating the loss of value, diminished counterparty confidence, and constrained liquidity." Proponents counter that fair value accounting provides useful information to investors and its suspension would increase market uncertainty and decrease transparency. (SEC, 2008, p. 12).

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In the middle of the 2007–08 financial crisis, a highly unusual public debate emerged about the nature of accounting representations and, in particular, the use of 'fair value' accounting. As the opening quote from the Securities Exchange Commission's (SEC) report on mark-to-market accounting suggests, critics argued that fair value accounting was no longer representing the actual value of assets, but was instead itself contributing to the crisis by requiring financial institutions to record losses based on market perceptions of value. These, in turn, critics suggested, were interacting with product structures and capital rules for financial institutions to force asset sales that were driving market values even lower, feeding a downward spiral of both liquidity and counterparty confidence. Defenders of fair value accounting responded to such criticisms by insisting that they were no more than a misplaced attempt to 'shoot the messenger' and 'suppress' information that was vital for investor decision making. Interestingly, critics seemed to both retain a belief in accounting's capacity to simply reflect 'true economic value', whilst at the same time pointing to its much more active participation in the dynamics of the crisis. Such was the intensity of this debate that when the *Emergency Economic Stabilization Act* was signed by President Obama in October 2008, it required the SEC to conduct a study of mark-to-market accounting as it applied to financial institutions and submit a report to Congress on this within 90 days. The SEC report, published in December 2008, offered some comfort to both defenders and critics of fair value accounting. Reassuringly for defenders, the SEC report concluded that 'fair value and mark-to-market accounting do not appear to be the "cause" of bank and other financial institution failures' (2008, p. 7). It nevertheless identified numerous areas where the present guidance for preparers in SFAS No.157 needed improvement and further clarification.

By coincidence, December 2008 was also the moment when the Financial Accounting Standards Board (FASB) and International Accounting Standards Board (IASB) were meeting to resolve the final wording of the first phase of a joint project, begun before the crisis in 2004, to create a common conceptual framework for accounting. The IASB/FASB Conceptual Framework, published in 2010, defined the objective of financial reporting as being to provide investors and creditors with accounting information that is relevant, i.e., 'capable of making a difference', both confirmatory and predictive, to their economic decisions. It then grounded its pursuit of such relevance in what is arguably the bedrock of the conceptual framework: 'To be useful, financial information not only must represent relevant phenomena, but it also must faithfully represent the phenomena that it purports to represent. To be a perfectly faithful representation, a depiction would have three characteristics. It would be complete, neutral and free from errors' (FASB, 2010, QC12).[1]

In line with their defence of fair value accounting during the crisis, at first sight this definition seems to suggest that accounting representations both can and do no more than passively reflect independently existing 'economic phenomena'. The definition assumes a clear separability of 'relevant phenomena' – e.g. a group of assets – and an accounting representation of these phenomena, and then suggests that accounting is meaningful only to the degree that it can reflect or 'faithfully represent' such independently existing phenomena. In this way the definition of faithful representation seems to imply standard setters' own attachment to a 'correspondence' theory of truth in which meaning inheres in the relation between sign and referent, and, as importantly, to encourage users to view accounting representations in this realist way.

Despite offering this apparent reassurance that accounting is capable of objectively reflecting economic 'truth' that lies beyond it, in practice standard setters had met with considerable opposition during the consultations and discussions that preceded the publication of the conceptual framework. In particular, both practitioners and a minority of board members had questioned the wisdom of using the term 'faithful representation' as a substitute for the long-established term 'reliability'. In their recent careful tracing of how this substitution occurred, Erb and Pelger (2015), describe how the term 'faithful representation' first appeared, along with the term 'verifiability', in SFAC No. 2 issued by the FASB (1980), as subcomponents of the superordinate term 'reliability'. In line with Power (2010), Erb and Pelger suggest that the subsequent substitution of 'reliability' by 'faithful representation' in part reflected the growing influence of financial economics on perceptions of accounting's purpose as 'relevance' for investor decision making. However, Erb and Pelger, following Georgiou and Jack (2011), argue that the associated move to fair value accounting was driven 'not on the basis of academic theories, but because of the pragmatic concerns by standard-setters about financial derivatives, which have very small or no historical costs' (2015, p. 24). Here, Erb and Pelger (2015, p. 31) suggest that 'reliability' and its associated notion of 'verifiability' proved a major obstacle since verifiability problematised the use of fair values where fair values must be estimated (Barth, 2007, p. 11). It was this 'stumbling block', they suggest, that led standard setters to replace 'reliability' with 'faithful representation', since only this allowed them to 'conceptually extends the boundaries of appropriate financial reporting as it moves away from verifiability towards assessments of allegedly user-demanded future benefits' (Erb & Pelger, 2015, p. 31). In contrast to 'reliability', as a term 'faithful representation' could be applied both to verifiable transactions and unverifiable forward estimates.

The paper that follows takes seriously the claims of critics that fair value was an active participant in the dynamics of the financial crisis, and then sets out to explore this participation through drawing on the works of Saussure and Derrida. For Saussure, the relation between sign and referent is always 'arbitrary' and hence precludes the possibility that meaning can inhere in the simple 'correspondence' of a sign to its referent. Instead, a sign only acquires its meaning from the coherence of the language system of which it is a part, and the play of difference between signs within this; in his own words: 'in language itself, there are only differences' (Saussure, 1983, p. 118). The IASB/FASB Conceptual Framework offers a perfect illustration of this in its own attempts to define 'complete', 'neutral', and 'free from error'. Rather than

[1] The IASB (2010, 2018) uses an identical definition of faithful representation.

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bring us closer to the reality to which these words are seeking to refer, their meaning can only be elaborated by reference to other words; completeness is defined as 'all necessary', neutrality as 'without bias', and freedom from errors as 'no errors or omissions'. As applied to accounting representations, such a view of signification implies that a faithful representation of economic phenomena is not an 'ideal' towards which practice can aspire, but rather an impossibility. Instead, the meaningfulness of accounting depends on the coherence of accounting as a language system, and the play of difference between accounting signs within this. To this Derrida (1976, 1981, 1982) added his notion of *différance*, through which he sought to simultaneously acknowledge both the spatial and temporal nature of meaning. To differ is also always to defer such that the meaning of a sign is never wholly present but is inevitably changed through the play of difference with other signs over time. Rather than simply reflect the value of independently existing economic phenomena at a moment in time, and their changing value over time, it is accounting signification itself that constructs values that will inevitably change in the play of difference with other accounting signs over time.

Saussure and Derrida's view of semiotics is the antithesis of a 'correspondence' view of representation where meaning seems to inhere in the referent, and which the sign merely passively reflects. Our paper draws its title from Jameson's (1991) suggestion, following Saussure and Derrida, that such a common sense view of representation is no more than an 'objective mirage', created as an effect of the use of a common language system within a community; processes of representation, once shared, are lost to sight such that they seem only to disclose an objective reality beyond them. In relation to accounting, such an 'objective mirage' is precisely the common sense that accounting representations merely faithfully represent the value of independently existing economic phenomena. Accounting representations are read as if the values they produce are fully present and independent of their representations. Whilst such effects are perhaps inevitable, the semiotics of Saussure and Derrida points to the central constitutive role of accounting representations in the creation of economic phenomena. As Law (2004, p. 32) describes this:

> Reality is neither independent nor anterior to its apparatus of production. Neither is it definite and singular until that apparatus is in place. Realities are made. They are effects of the apparatuses of inscription. At the same time, since there are such apparatuses already in place, we also live in and experience a real world filled with real and more or less stable objects.

As our opening quotation from the SEC report suggests, such was the severity of the financial crisis that this 'objective mirage' had begun to collapse, and the adequacy of fair value accounting representations itself became an object of public attention and debate. Significantly, both the critics and defenders of the role of fair value in the crisis seemed to assume, or at least expect, that accounting should be able to reflect 'true economic value', and yet the crisis itself cannot easily be explained or understood on the basis of such realist assumptions. Instead, this requires a careful exploration of the new, yet at the time largely opaque, 'apparatus of production' of fair values for the credit derivative products that were at the heart of the crisis.

In a defence of including estimates of the future in financial statements published before the financial crisis, Barth (2006, p. 272) had argued that it is 'self-evident that financial statement amounts that reflect current economic conditions and up-to-date expectations of the future will be more useful' to decision makers. She acknowledged that 'with more estimates of the future incorporated into today's measures of assets and liabilities, income will be less predictable' (2006, p. 272). However, she then argued that the 'predictability of income itself is not an objective of financial reporting. Rather, income's ability to predict future cash flows is important' (2006, pp. 272–273). As we have described, it was precisely the ability of market prices to faithfully represent cash flows that critics of fair value came to question in the financial crisis. In what follows we draw on the semiotics of Saussure, and Derrida's development of this, to explore how the use of forward estimates in the pricing of credit derivatives not only made income more volatile but also produced predictions that proved positively misleading. Specifically, drawing on both Saussure and Derrida, we explore accounting's participation in the financial crisis in terms of the collapse of difference between fair value accounting signs, the possibly self-interested neglect of the always deferred nature of accounting signification, and the effects of new sources of heterogeneity that the fair value measurement hierarchy introduced to accounting.

A number of prior studies of accounting representations have also been influenced by Saussure's theory, in particular, his principle of arbitrariness.[2] In his debate with Solomons (1978, 1986, 1991), Tinker (1991, p. 303) draws on Saussure's principle of arbitrariness and Derrida's concept of traces to assert that accounting signs are independent of economic reality. In a similar vein, Macintosh, Shearer, Thorton, and Welker (2000) introduced Saussure's principle of arbitrariness as a background for their Baudrillard inspired view that much of accounting information no longer refers to any reality. In his Davidsonian analysis, however, McKernan (2007, p. 175) rejected such a view by arguing that Saussure's principle of arbitrariness denies the 'correspondence' theory of truth but not reference. McKernan (2007, p. 176) draws on Derrida's work to support this claim

[2] A number of prior studies have employed the work of Saussure in other areas, including: the examination of the accounting terminology of TFV (e.g. Nobes, 1993; Walton, 1993), the background knowledge for a Derridean deconstruction of a research text (e.g. Arrington & Francis, 1989) and a Derridean analysis of the responsibilities of the accounting community (e.g. McKernan, 2011), and environmental disclosures in annual reports (e.g. Neu, Warsame, & Pedwell, 1998).

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but nevertheless ignores Derrida's notion of *différance*.[3] Most recently, Hayoun (2018a, 2018b) has drawn on Saussure to problematise the category of asset and fair value as a market-based measurement. Most of these studies have focused on the principle of arbitrariness from Saussure's semiotics. However, what is absolutely original in Saussure is not his insistence on the arbitrariness of the linguistic sign, but his vision of language as a semiotic system. The paper that follows sets out to present the key elements of Saussure's semiotics together with subsequent theorists' critiques, and then to explore its relevance for our understanding of accounting and its participation in the 2007–08 financial crisis.

The paper is organised as follows. In Section 2 Saussure's theory and Derrida's development of this is introduced and related to accounting. Section 3 of the paper then seeks to draw upon Saussure and Derrida to explore accounting's participation in the crisis in credit derivatives markets of 2007–08. The paper concludes by arguing that, in the financial crisis, in presenting inherently uncertain future estimates as calculable risks, fair value made possible and encouraged not the management of risk, but rather its exploitation.

2. A Saussurean view of accounting representations

Three sets of distinctions are fundamental to Saussure's (1983) theory: diachronic versus synchronic linguistics; *la parole* versus *la langue*; and signifier (or signal) versus signified (or signification).[4] Rather than being concerned with language changes from one period to another (i.e., diachronic linguistics), Saussure studied the operation of language during a period of minimal change (i.e., synchronic linguistics). During a stable period, a linguist can study language in use (i.e., *la parole)* and an abstract and socially shared system of signs governed by rules and conventions (i.e., *la langue*). 'The relationship between 'langue' and 'parole' can be thought of as dialectical: as parole would not be possible without the governing conventions of langue, langue would not exist in time and space without the realization of its principles in parole' (Becker-Leckrone, 2005, p. 200). A sign, a basic unit in *la langue*, involves a link between signifier and signified. A signifier is an acoustic image. What a signifier evokes, or the meaning indicated by a signifier is a signified, i.e., a mental construct but not a referent (e.g. a real object, or thing etc.). While the signifier is psychological in *la langue*, it becomes material in *la parole*. A sign to be studied can be words or larger than words (e.g. compounds, locutions).

For Saussure, the arbitrary nature of the sign is the first principle of language. The signifier is arbitrary or based on a community's random choice. The idea of 'sister', for example, can be signified by the French sequence of sounds s-ö-r or any other sequence of sounds. The signified is also arbitrary. In Fig. 1, Planes A and B refer to featureless sound and amorphous thought respectively.[5] Dotted lines arbitrarily divide the two planes into signs. Concepts are not 'natural' because they do not result from some predefined structure in the world. It is a logical conclusion from the principle of arbitrariness that a sign as a whole is ontologically arbitrary and has no intrinsic or necessary relation to any referent (Cuypere, 2008, p. 38). What exactly does it mean to say that the sign is ontologically arbitrary? According to Žižek (2014, pp. 195–197), it does not mean that we can separate reality and signs and compare them in order to demonstrate the arbitrariness of signs. Nor does it mean that language represents reality faithfully but imperfectly because of the 'richness' of reality. Rather, it means that it is simply impossible for us to get outside of language to examine reality and then deduce representation. This is not to deny reality but rather to insist that we have access to reality only through language. To Fig. 1 we can add Plane C, which refers to reality as apprehended through language. As Jameson (1972, pp. 32-33) seeks to explain this, 'it is not so much the individual word or sentence that "stands for" or "reflects" the individual object or event in the real world, but rather that the entire system of signs, the entire field of the langue, lies parallel to reality itself'.

Since a word does not acquire meaning from its 'correspondence' with the world, a question arises as to how a sign acquires its meaning and identity. For Saussure, the answer lies in the principle of differentiation: an *ontologically* arbitrary sign derives its identity not from its relation to the world, but from its differential relation to other signs within a language system governed by social and homogenous rules and conventions that are independent of individual users. Thus, whilst signs are *ontologically* arbitrary, they are not *socially* arbitrary, since as an individual I am bound by the rules of the community within which I speak.[6] In Fig. 1, the wavy continua of sound and thought are used to remind us that both signifier and signified are relative and relational. The differential relations between signs fall into syntagmatic and associative (or paradigmatic) relations: the former involves the way signs are combined to form a sequence whereas the latter involves alternative signs that could be used.

Subsequent critics have pointed to two key problems with Saussure's conception of the sign. Although Saussure insists that the relationship between signifier and signified is arbitrary and only fixed by social convention, he nevertheless seems to privilege the signified over the signifier. If we reconsider the sequence of sound s-ö-r in Saussure's example, we

[3] As pointed out by Gaffikin (2006) and McKernan (2011), Derrida has received relatively little attention in the accounting literature, and there are only a handful of studies employing Derrida in areas other than accounting representations, including: a research text in positive accounting theory (e.g. Arrington & Francis, 1989), responsibility and accountability (e.g. McKernan, 2011, 2012; Messner, 2009), and rules- and principles-based accounting and the value of an overriding requirement of fair presentation through drawing on Derrida's works on religion and deconstruction (McKernan & Kosmala, 2007).

[4] Saussure's (1983) *Course in General Linguistics* was first published in 1916.

[5] Saussure (1983, p. 110) defined Plane A as amorphous thought and Plane B as featureless sound. In this paper, we reverse the two planes in order to show the primacy of the signifier over the signified.

[6] Ontological arbitrariness applies to the relationship between signs and the world whereas socially arbitrariness governs the relationships among individual members of a language community.

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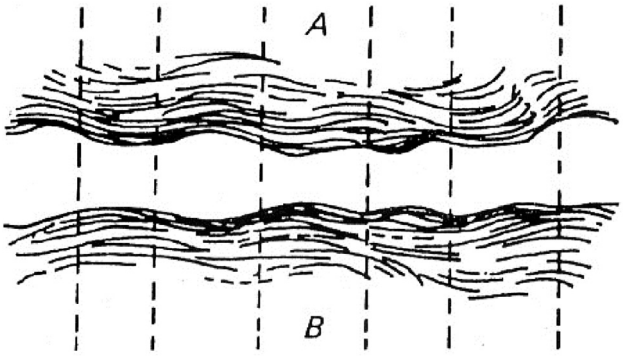

Source: Saussure (1983, p. 111).

Fig. 1. Saussure's model of the sign.

will notice that the signifier seems to be there only to communicate the signified, which precedes the signifier (Barthes, 1975). Furthermore, despite the negative characterisation of signifier and signified, Saussure treats the sign as a positive and stable unit. In his own words, 'Although signification and signal are each, in isolation, purely differential and negative, their combination is a fact of a positive nature' (Saussure, 1983, pp. 118–119). It was Derrida who first deconstructed this conception of the sign by exploring the radical implications of Saussure's principle of differentiation. To do this, Derrida (1976, 1981, 1982) introduced the key term *différance*, a word that comprises two senses of the French verb 'différer': 'to differ' in a spatial sense and 'to defer' in a temporal sense.[7] Derrida agreed with Saussure that it is only its differentiation from other signs that makes a sign meaningful. Since meaning for a sign depends on how it differs from other signs in a language system, then the sign bears the traces of other signs from which it differs. For Derrida, however, to differ is also to defer: the very play of difference implies that meaning is not centred within a sign but instead always unfolds in the play of difference between signs *over time*. A sign relies on what it is not, 'thereby keeping itself the mark of the past element, and already letting itself be vitiated by the mark of its relation to the future element' (Derrida, 1982, p. 13). Simply put, at any point in time one cannot take at face value what a signifier signifies as this is never fully present and will be changed by the future. For Derrida, and in contrast to Saussure, as the signified always depends on the play of signifiers over time, 'meaning springs from the signifier to the signified and not vice versa' (Stavrakakis, 1999, p. 25). In the words of Jameson, 'What we generally call the signified – the meaning or conceptual content of an utterance – is now rather to be seen as a meaning-effect, as that objective mirage of signification generated and projected by the relationship of signifiers among themselves' (1991, p. 26). In sum, not only is the relationship between words and the world arbitrary, but also what we take for the 'world' is seen as an effect only of the play of difference between signs. From this perspective the 'correspondence' of the word with the world can be understood as a meaning effect; an 'objective mirage' generated and projected by the play of difference between signs.

Of particular relevance to the analysis we develop in what follows is the distinction that Derrida draws between what he calls the future that is 'to come' and the 'horizon'; the future anticipated from the present. For Derrida, the future that is 'to come' cannot be reduced to what is 'yet to come' as if it could be given any form beforehand. In his own words, 'It is perhaps necessary to free the value of the future from the value of "horizon" that traditionally has been attached to it – horizon being, as the Greek word indicates, a limit from which I pre-comprehend the future. I wait for it. I predetermine it. And thus, I annul it' (Derrida, 2001, p. 20). The anticipation of the future in the present can seem to render the future known and predictable and, in this sense, annul the intrinsic uncertainty of what is 'to come'. Derrida's notion of *différance* calls into question the ability of accounting to 'faithfully represent' economic phenomena in at least two important respects. In the form of current market prices it suggests that accounting is at best only reflecting its own construction of 'economic phenomena'; it is accounting that delineates or constructs particular economic phenomena. In relation to credit derivatives, however, where present fair values are derived from the projection and discounting of future cash flows to the present, Derrida's notion of *différance* suggests that this particular attempt to annul the future and give it determinate current value, cannot, and perhaps should not, ever be confused with the future that is 'to come'.

Derrida's development of Saussure's theory casts new light on the word-to-world relationship. Instead of the world having a prior and determinate form, it is language that enacts or constructs the 'world' (Law, 2004). In other words, language imposes its organisation upon the world so that the world appears to us through the structure of language (Schalkwyk, 2004). Not surprisingly, Derrida (1976, p. 220) argues that 'there is nothing outside the text', suggesting that 'there is no engagement with or inhabitance of the world which doesn't live off the mediation of signs' (Smith, 2005, p. 44).

[7] The term 'différance' was initially used by Derrida in his 1963 paper 'Cogito et histoire de la folie' and then elaborated in his other works including *Of Grammatology*, his 1968 essay 'Différance' collected in *Margins of Philosophy,* and in various interviews collected in *Positions*.

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As language functions by *différance*, the reference to reality is temporary and subject to future modifications. Simply put, the notion of *différance* problematises reference but does not deny it. In the words of Smith (2005, p. 62), 'reference never gets to a simple, pure "outside" which is not always already implicated in a network of signifiers, but that does not mean that there is no reference; it is just that such reference is always a bit slippery – mediated and undecidable'.

Recognition of the arbitrary and differential nature of signs helps to illuminate the relationship between accounting representations and reality. 'Economic phenomena' do not have a predetermined nature or essence. Rather it is accounting that constitutes or abstracts 'economic phenomena' from reality and orders them into different categories such as 'physical reality' (e.g. property, plant and equipment) and 'social reality' (e.g. debt and ownership claims). With regard to their properties, neither costs nor fair values are there to be discovered; rather, they result from accountants' choices as they construct the values of accounting elements. If we mark an asset to a market price, the price constructs, as distinct from reflects, the 'value' for the asset. As Aglietta (2015, p. 8) puts it: 'The market creates values; it does not reflect pre-existing values'. Moreover, since the meaning of an accounting representation is always also deferred by other representations, any representation of an 'economic phenomenon' is only temporary and open to revision through the play of difference in the future.

Such Saussurean/Derridean views lie in stark contrast to existing views of accounting representations, which fall into three positions: 1) the realist view in the IASB/FASB Conceptual Framework, Mattessich (2003), Mouck (2004), and Shapiro (1997)[8] that assumes the separability of economic phenomena and accounting, and the ability of accounting to reflect these either perfectly or at least approximately; 2) Hines' (1988) extreme constructivist view that can be taken as a reduction of reality into language; and 3) Macintosh et al.'s (2000) view that many accounting representations are no longer associated with reality. The first position insists upon a strict division between accounting representations and economic reality. Ontologically the realist view assumes that 'economic phenomena' have a prior and determinate form waiting to be discovered by the observer (e.g. Shapiro, 1997; Mattessich, 2003; Mouck, 2004). Epistemologically it assumes that accounting has the ability to reflect independently existing phenomena at least approximately (e.g. Shapiro, 1997). If accounting could reflect things out there waiting to be exposed, we might expect exact equivalence in the translation of accounting concepts and principles between different languages although the difficulties of exact translation have other roots.[9] Yet, as the literature on accounting translation suggests, there is no one-to-one equivalence in the translation of accounting concepts and principles from one language into another (e.g. Evans, 2004, 2018), because 'accounting terminology and the underlying concepts differ internationally' (Evans, Baskerville, & Nara, 2015, p. 5). From a Saussurean viewpoint, rather than reality having predetermined nature to be exposed, it is accounting as a business language that constructs and enacts 'economic phenomena'. As arbitrary enactments are accomplished differently in different languages, accounting terminology and concepts are inevitably different across national boundaries.

The second position provides a classic constructivist reading of accounting by arguing that 'in communicating reality, we construct reality' (Hines, 1988, p. 251). Actually, there is more to the story. In the Saussurean analysis we have sketched, reality does exist but is only accessible to us only through the structure of (accounting) representations. As Derrida (1984, p. 124) complains, 'I never cease to be surprised by critics who see my work as a declaration that there is nothing beyond language'. By failing to recognise the existence of reality despite its lack of predetermined essence, Hines' view may mislead us into relegating everything to the status of pure linguistic constructs.

The third position brings the constructivist position more clearly into view in suggesting that representations can both precede the real, and also lose all reference to reality. Drawing upon Baudrillard's orders of simulacra, Macintosh et al. (2000) assert that many of today's accounting signs circulate in a 'hyperreality' of self-referential models. They use accounting for financial instruments as one example of such self-referentiality: earnings affect security prices, which affect derivative prices, whose fair values in turn affect earnings. In their own words, 'neither the accounting sign nor the financial market sign appear to be grounded in any external reality. Instead each model appeals to the other model for the only "reality check" available' (Macintosh et al., 2000, p. 36). In their more recent analysis of fair value, Bougen and Young (2012, p. 394) similarly argue that Level 3 mark-to-model measurement should be understood through the lens of Baudrillard's notion of simulacra, along with the FASB's attempts to refine their guidance as to the use of Level 3 inputs; 'unobservable inputs, or assumptions about assumptions clearly connect valuations to simulacra'.

Given the central role of models in the creation and valuation of credit derivatives, Baudrillard's notion of simulacra, and with it the potential for a self-referential play of difference between accounting signs, has important explanatory potential for our understanding of accounting's participation in the financial crisis. However, in the paper that follows we want to draw on Saussure and Derrida to point to the limits of such self-referential processes. Macintosh et al.'s (2000) use of the term self-referential carries a dual meaning. The first is that accounting signs become pure signs which circulate between each other with no reference to reality. For Saussure, whilst accounting representations do not 'correspond' with reality, they nevertheless engage with and mediate reality; reference is never wholly lost. The second meaning is that particular accounting signs point back to each other in a self-referential circle that amplifies gains or losses, and it is this second meaning that we will follow here. In Saussurean terms, self-referentiality can be understood as a collapse of difference between signs. Absent any referent such processes might be imagined to be perpetual. However, following Saussure and

[8] Shapiro (1997) attempted to integrate two fundamentally opposing notions of objectivity, thereby ending up endorsing the 'correspondence' theory of truth (McKernan, 2007).

[9] For a discussion of other roots, see the body of research examining translation in accounting (e.g. Baskerville & Evans, 2011; Evans, 2004; Evans et al. 2015).

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in particular Derrida, we want to suggest that such self-referentiality has its own temporal limits, as accounting signs come to interact with other semiotic systems over time. By describing the endless play of signification, whether there is a collapse of difference among accounting signs or not, as 'a hyperreality of self-referential models', Macintosh et al. (2000) exaggerate the sustainability of self-referentiality.

In the section that follows we draw on Saussure's semiotics and Derrida's development of this to explore the participation of accounting representations in credit derivatives markets during the 2007–08 financial crisis.

3. Accounting's participation in the collapse of credit derivatives markets

3.1. The genesis of the financial crisis

As is now well understood, one contributory factor to the financial crisis was the extension of loans to those with increasingly poor credit ratings. Much less well understood is the complex web of credit derivative products (see Table 1) that were the basis of the ensuing crisis. Here we rely primarily on MacKenzie's (2011) interview-based research with those who created, rated, and sold these products. Traditionally a loan issuing bank would have held a loan until it was repaid. However, in 1971 the Federal Home Loan Mortgage Corporation (Freddie Mac) began to securitise its prime government guaranteed mortgages; packaging pools of these mortgages and selling them on to investors. These mortgages were fixed rate and had no prepayment penalty, and so the primary risk for investors in such mortgage backed securities (MBSs) was the risk of prepayment. This was followed a few years later by the first private securitisations of mortgages and other assets; a bank, or a special purpose vehicle (SPV), assembled diversified pools of mortgages and then sold them on to investors. Such private securitisations allowed the extension of loans to subprime borrowers but, without government guarantees, these carried the risk of default. Such risk was managed both through diversification of the underlying pool of mortgages, and through a process called 'tranching'.

Investors in the top tranche – later termed 'super-senior'– were paid the lowest interest rate but would be the last to suffer default losses. In contrast, investors in the bottom tranche were paid the highest interest rate but would be the first to lose money in case of interest and principal shortfalls. Such tranching, along with the use of 'excess spread' and 'over collateralisation', was held to affect a form of 'credit enhancement' that allowed the senior tranches of even subprime mortgages to be AAA rated. As MacKenzie (2011, p. 1797) describes, with such credit enhancement 'around four-fifths of a typical subprime ABS was rated AAA, the same rating as enjoyed by the sovereign bonds of the USA and other leading nations'. So enhanced, such subprime products were attractive to investors because they were not fixed-interest; instead loans were typically structured with an initial if still high 'teaser rate', which would then increase further after two years. A history of ever rising house prices, it was argued, would allow such borrowers to avoid defaulting through creating the option of refinancing after two years, or, even if they did default, would ensure that the lender did not lose since the value of the property would have increased.

Two further product innovations were to prove key to the subsequent crisis; collateralised debt obligations (CDOs) and credit default swaps (CDSs). CDOs were originally developed as assemblages of corporate bonds and loans which, for example, allowed banks to get loans off their balance sheets through packaging and selling them on to different investors. In the late 1990s these instruments began to be used to package and sell on bundles of MBSs. CDOs depended on the use of similar processes of tranching but now applied to different tranches of MBSs; a process which made it possible for lower rated 'mezzanine' MBS tranches to be transformed again into AAA rated securities. The profits from such 'arbitrage' thus wholly depended on how their different tranches were rated. MacKenzie (2011) suggests that, within the rating agencies, the rating of MBS CDOs was typically handled by different groups from those who rated the initial mortgage securitisations. Critical to such rating and to CDO profitability was the estimation not only of prepayment and default rates, but also of 'correlation' within the assembled assets; the chances of one default being tied to others through, say, a housing price downturn.

Confidence in MBS CDOs was further enhanced through one further product innovation. CDSs had originally been developed by a team within J.P. Morgan as a way for corporations to offset risk through creating a market in which a protection seller would effectively insure the protection buyer from default risk (Tett, 2009). The default risk would be assumed by a protection seller in return for a premium which, in the absence of default, provided a steady stream of income. The protection seller would, however, have to compensate the buyer for any losses that subsequently accrued. As investor demand for MBS CDOs came to exceed the availability of mortgages to be securitised, a new form of 'synthetic' CDO was then created built only from CDSs. A synthetic CDO did not require any ownership of actual mortgage assets but, instead, merely used a pool of CDSs to mirror the risk profile of a referenced tranche or tranches of MBS CDO assets. In a synthetic CDO, a SPV or bank sold protection against credit risk via CDSs and, in the meantime, bought protection by selling tranches of synthetic CDOs to other investors. Such synthetic CDOs were initially over the counter products traded by a small group of brokers. As we shall later describe in more detail this was superseded in 2006 by the launch of a tradeable CDS index – the ABX.HE index.

As described in the introduction, the emergence of derivative products such as CDOs and CDSs was itself a key driver in accounting standard setters' adoption of fair value. Conceptually, fair value involved a new focus on decision usefulness for investors and a redefinition of reliability away from entity views of value to a view of reliability grounded 'in the collective

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Table 1
Credit derivatives instruments.

Credit derivatives instruments	Definition
Mortgage backed security (MBS)	A mortgage-backed security (MBS) is a financial security whose value is derived from and collateralised by a pool of underlying mortgage loans. After the underlying mortgages are pooled, separate tranches of securities will be created with different risks and yields, and then sold to investors. The distribution of cash flows among investors follows the waterfall rules: principal and interest payments go to the super senior tranches until investors of these tranches are fully paid before they flow to the mezzanine and then subordinate tranches. Although holders of mezzanine and subordinate tranches have higher risk of loss in case of interest and principal shortfalls, they receive interest payments at higher interest rates than holders of super senior tranches
Collateralised debt obligation (CDO)	A collateralised debt obligation (CDO) can be categorised as a cash or synthetic CDO. A cash CDO is a financial security that invests in and derives its value from a pool of assets, which are typically securities (e.g. corporate bonds, asset-backed and mortgage-backed securities), but can also include loans. These pooled cash-generating assets are debt obligations that serve as collateral for CDOs. Where a CDO is backed by mortgage-backed securities, it is referred to as a MBS CDO. In contrast, a synthetic CDO is a CDO that invests in and derives its value from credit default swaps or other noncash assets to obtain exposure to a pool of assets. Like MBSs, cash and synthetic CDOs are sliced into tranches before they are sold to investors
Credit default swap (CDS)	A credit default swap is a type of insurance contract in which the buyer of the swap pays a premium to the seller of the swap in lieu of compensation in case of the occurrence of a pre-specified credit event (e.g. bankruptcy, a credit downgrade, or interest and principal shortfalls) during the term of the contract

judgment of the market' (Power, 2010, p. 200). However, pragmatically, derivatives were a key driver of the change because, as Power (2010, p. 204) describes it, 'their "historical" cost, if such existed, was widely agreed to be irrelevant to their value over time'. As an ideal, the notion of market value suggests a singular price for an asset or liability realised impersonally through the mechanisms of the market, the determination of which is entirely independent of accounting and accountants. As Bromwich (2007, p. 46) describes, 'these prices are, ideally, objective, as actual market prices are empirical phenomena, publicly available and can be verified by all'. In practice, however, the development of new fair value measurement standards faced a host of practical difficulties. The 'market' that might offer a 'true' representation of value turned out to be a particularly idealised one. Actual markets are often 'imperfect', thereby creating the potential for distortions to prices which reflect only the relative power of different market participants. Markets are also prone to 'failure'; empirically markets are characterised by cycles of boom and bust which create the potential for any reliance on market prices to become a source of destabilising contagion. For many assets an active market simply does not exist. A further set of challenges was created by differences in the intended use of assets; whether they are being actively traded, or available for sale, or instead intended to be held to maturity.

The measurement standards for market value that subsequently emerged can be seen as iterative attempts to take account of the different dimensions of these representational challenges. In 1991, the FASB (1991) issued SFAS No. 107, requiring entities to disclose the fair value of financial instruments using quoted market prices of identical or similar financial instruments, or valuation techniques. Note that here the ideal of market value has been replaced by 'fair value' in an attempt to deal with the absence of active markets for many assets or liabilities. In 1993, the FASB (1993) issued SFAS No. 115, requiring fair value through income for securities held for trading, fair value through equity for available-for-sale securities, and amortised cost for securities intended to be held to maturity. In 2006, the FASB issued SFAS No. 157 (now known as ASC 820 in the updated FASB Codification) with the wider objective of improving the consistency and comparability of all fair value measurements. Its definition of fair value sought to find a way around the challenges described above in relation to the pro-cyclicality of markets. It defined fair value as 'the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date' (FASB, 2006, para.5). This provisional 'price that would be received' and 'in an orderly transaction' led standard setters to then define a three level hierarchy of the different ways in which an 'exit value' might be measured, depending on the nature or state of the market for particular assets or liabilities. Most reliable is the use of Level 1 inputs defined as a quoted price for an identical asset or liability in an active market. Level 2 inputs, deemed less reliable, refer to observable inputs other than Level 1 inputs. As pointed out by Ryan (2008), there are two broad subclasses within Level 2 inputs. The first subclass refers to quoted market prices for similar items in active markets or for identical items in inactive markets. The second subclass of Level 2 inputs includes observable inputs other than quoted prices (e.g. interest rates and default rates) and market-corroborated inputs. Finally, Level 3 inputs, deemed the least reliable, refer to unobservable inputs based upon management's own estimations of future cash flows, discount rates and other valuation inputs. Here the standard requires management to make assumptions about the assumptions the market would make in valuing an asset or liability. Regardless of where an input falls within this hierarchy, the objective of fair value measurement remains the same: namely, to identify an exit price that would be received to sell an asset or paid to transfer a liability.

In the period prior to the crisis these complex reporting standards for fair value had seemingly worked effectively, and signalled the profitability of these new derivative products. It was claimed that credit derivatives were helping to create liquidity for illiquid markets and dissipating risk, thereby minimising the probability of a systematic financial crisis. In

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the words of Geithner (2008), then President of the Federal Reserve Bank of New York, 'In the financial system we have today, with less risk concentrated in banks, the probability of systemic financial crises may be lower than in traditional bank-centred financial systems'. Formally the use of securitisation, as Geithner clearly assumed, should have meant that banks had passed on the risk of derivatives to a much wider pool of investors. In practice, however, many of these risks remained on bank balance sheets, or in off-balance sheet SPVs, including some of the lower tranches that were retained as a mark of confidence, super senior tranches of MBSs that were hard to sell because of their low spread, and products that were being 'warehoused' whilst their securitisation was being completed (Crotty, 2009).

However, in 2007–08 a 'crisis' began to be registered through fair value measurement, first in a dramatic move from profit to loss in a number of large financial institutions, followed in the next quarter by the announcement of even heavier losses. Between September 2007 and March 2008 Merrill Lynch reported write-downs of $24.5 billion, Citigroup $22 billion, UBS $18 billion, HSBC $10 billion, and Morgan Stanley $9.5 billion (Roberts & Jones, 2009, p. 862). For those taking a realist view of accounting representations such massive and rapid changes in reported performance were hard to comprehend; how could reported performance shift so violently in such short periods of time and still be faithful? As described in the introduction, this then stimulated a heated public debate between those who argued that fair value was itself causing the crisis and should be suspended, and those who argued that such criticisms of fair value were no more than a misplaced attempt to 'shoot the messenger'.

In what follows we offer a Saussurean reading of accounting's participation in the crisis. As we will seek to illustrate below, in Saussurean terms, accounting's participation in the crisis can be read in terms of a collapse of difference between fair value accounting signs, a widespread failure to recognise or acknowledge the always deferred meaning of fair value accounting signs, and the ways in which the fair value measurement hierarchy introduced new sources of heterogeneity into accounting representations. Together, these produced a violent oscillation of profit and loss over time, and with this, a loss of faith in accounting's capacity to 'faithfully represent' economic phenomena. Such is the complexity of the financial crisis, and accounting's role within it, that in what follows we will focus only on accounting for credit derivatives.

3.2. The collapse of difference between accounting signs

As described above, fair value measurement places Level 1 market prices at the top of the hierarchy as the most independent and reliable basis for measurement, followed by Level 2 comparable products, and only in their absence allows Level 3 mark-to-model measurement. What is notable about the early market prices for MBSs, MBS CDOs, and CDSs is that they were in practice all model derived; it was initial mark-to-model measurement that served as the basis for early Levels 1 and 2 market prices.

As we have also described, the raw material for these models was bundles of mortgages of different quality and the estimates of the future cash flows that these would generate. For subprime mortgages, with initial teaser rates which then increased substantially, these future cash flows were particularly attractive. The viability and profitability that might flow from these securitised products then depended on the modelling of macro- and micro-economic assumptions to which these estimates of future cash flows were then subjected, notably assumptions about prepayment, default, and recovery rates. For MBS CDOs and the CDSs that referenced them, particularly single tranche mezzanine CDOs, a further critical assumption concerned the 'correlation' of the pooled assets. The calculation of MBS CDO correlation was more complex than for CDOs of corporate loans and bonds, but with a stable history of low defaults and rising house prices, a correlation of 0.3 was assumed – a figure similar to that used for corporate bonds. MacKenzie suggests that it was only this 'modest' correlation assumption that ensured the modelled profitability of many MBS CDOs, which then in turn drove the rapid growth of the CDO market; 'to be able to take BBB raw materials and fashion a product that was mainly AAA was an enticing arbitrage opportunity, and it was one that was pursued with great vigour in the years immediately prior to the crisis' (2011, p. 1813). In 2001 in excess of $20 billion of MBS CDOs were issued, rising to more than $300 billion in 2006 alone. The apparent solidity of CDO profitability had the effect of feeding demand from yield hungry investors, which in turn fed back to those who assembled securitised MBSs and MBS CDOs and those who sold mortgages to subprime borrowers. The collapse of difference inherent in these processes lay in the 'contrived' nature of the profitability of these products; this modelled profitability, along with a seemingly plausible narrative of 'credit enhancement' realised through tranching, was a condition of their origination, rating and sale, and for a period accounting merely mirrored these modelled and self-interested assumptions. What punctured this self-feeding process, however, was the decision by some investors to look beneath or within the accounting signs. As we have described, CDOs and CDSs were assembled from already securitised bundles of MBSs. Rather than depend on the reported fair values of such assets, a handful of investors began to look in detail at the underlying bundles of mortgages and their actual and prospective record of default, and on this basis began to short the market (Lewis, 2010). At this point a wider set of references began to inform market prices and set in train a different if equally consequential form of self-referential processes.

As mentioned above, in January 2006 a new set of indices – the ABX.HE – had been launched by Markit and a group of investment banks. It replaced an opaque over the counter market of some 15 brokers trading CDSs on CDOs with protection buyers and each other. The ABX.HE index tracked the price of credit default insurance on 20 specified pools of residential MBSs with the underlying collateral being predominantly US subprime mortgages. There were several sub-indices, each

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of which referred to a different rating tranche of the residential MBSs: namely, AAA, AA, A, BBB, BBB-. A new roll of the indices was introduced every six months. Four still tradable series of the ABX index were issued, two from 2006 (06-1 issued in January 2006 and 06-2 issued in July 2006) and two from 2007 (07-1 issued in January 2007 and 07-2 issued in July 2007). Entering into an ABX.HE index contract was equivalent to buying or selling insurance on the underlying MBS tranches. The protection buyer paid a one-time upfront fee as well as a monthly premium, and in return would be compensated by the protection seller in the case of the occurrence of credit events that affected the constituent residential MBSs. Monthly premiums were calculated based on the outstanding notional amount of the index and a fixed premium rate determined at the launch of each roll. Each ABX.HE index traded at par at its launch and the protection buyer did not pay an upfront fee. After its launch, however, the price of each index would adjust to reflect the market's evaluation of the default risk on the underlying MBSs. If the price of an index fell to 80 per cent of par, then the protection buyer would be required to pay 20 per cent of the index notional amount as an upfront fee.

Despite the emergence of early indicators of a decline in house prices and growing numbers of defaults of 2005 vintage subprime mortgages in late 2006, the ABX indices remained relatively stable until the early months of 2007 (Lewis, 2010). As the ABX.HE prices eventually began to take account of the decline in house prices and rising subprime defaults, the index assumed a key role in the crisis. SFAS No. 157, issued in 2006, was effective for financial years beginning after November 15, 2007. However, most large financial institutions adopted SFAS No. 157 in the 2007 financial year either voluntarily or because of the requirements of SFAS No. 159 issued by the FASB (2007) (Ryan, 2008, p. 1606). Under the requirements of SFAS No. 157, as over the counter products, trading and available-for-sale MBSs and MBS CDOs were typically measured using Level 2 inputs drawn from broker quotes for similar transactions. As prices of MBSs and MBS CDOs declined, brokers were increasingly unwilling to quote prices. The fair value hierarchy permitted the use of other Level 2 inputs such as ABX.HE (Centre for Audit Quality, 2007), thereby making the ABX.HE the primary source of observable market inputs for the valuation of all CDOs (Fender & Scheicher, 2009; Gorton, 2010). As MacKenzie (2012, p. 349) describes it, 'The ABX was precipitated into a role that was wholly unanticipated when it was planned in 2005. Its falling levels in 2007–8 became the most visible numerical marker of the growing crisis and an important determinant of the solvency of many of the world's leading banks'.

At the time the Bank of England (2008) and others suggested that the prices of the AAA index had fallen far below those implied by the underlying cash flows of these CDO tranches and instead, were merely a reflection of 'declining risk appetite and heightened concern about market illiquidity' (Fender & Scheicher, 2009, p. 1943). In his more recent study of the index MacKenzie (2012) reports that the lower tranches of the index – 06-2 BBB index – fell to below 20 by late 2007, whilst the 06-1 AAA index fell from 95 in August 2007, to 85 in March 2008, 70 in December 2008 and 60 in March 2009. MacKenzie explains the fall in the AAA index in terms of people 'desperately seeking to use the ABX as a way of hedging mortgage market positions that they could not liquidate at any other than extremely distressed prices' (2012, p. 352). With the potential of total loss on lower tranches of the ABX, 'those who wanted to hedge had, therefore, no alternative but to use the higher tranches, especially AAA, to do so' (2012, p. 352).

However, it was the use of ABX.HE prices to mark-to-market all MBSs and MBS CDOs that can be seen to have collapsed the play of difference upon which the meaningfulness of accounting signs depends. Whilst the image of a market value typically implies a much wider market of which any asset is just a fragment, as described above, the ABX index represented only 20 synthetic CDOs referencing some 100,000 mortgages in any particular series. As such, its composition did not reflect the actual composition even of the much larger pool of other synthetic CDOs, let alone the diversity of the cash-flow MBS CDOs and MBSs that it was also being used to mark to market. In other words, a small and not at all representative sample of synthetic assets was used to value a much wider and diverse set of assets. Mark-to-market via the index, therefore, had the effect of amplifying the micro movements of the referenced securities across all MBSs and MBS CDOs regardless of their composition, along with the associated fear of losses in the face of market illiquidity.

The use of the ABX.HE index to value MBSs and MBS CDOs in the crisis can again be seen as an extreme example of self-referentiality. As Fig. 2 suggests, an ABX.HE index on a sample of 20 MBSs determined the valuation of other individual MBSs, which in turn got reflected back, through a number of channels, in a falling index price, which was then again used to mark-to-market individual MBSs, and so on. Fair value became no more than a system of mirroring: prices for individual MBSs informed the ABX prices, which in turn were used to value individual MBSs. On a Saussurean view, the reason for the above self-referential process is the collapse of difference between prices for individual MBSs and the ABX.HE indices; prices for individual MBSs are both constituted by and constitutive of the ABX prices. The result during the crisis was massive write-downs of MBSs and MBS CDOs by financial institutions despite the possibly positive cash flows in a product (Ng, Mollenkamp, & Patterson, 2007). As just one example, in the fourth quarter of 2007, Morgan Stanley (2007) reported $9.4 billion in mortgage related write-downs, most of which related to super senior derivative positions in CDOs. The valuation methodology for these instruments was the ABX.HE index. From a realist perspective, such write-downs merely reflected the decline in the values of the underlying mortgages, but from a Saussuean perspective, they were themselves the effect of their representation using the ABX indices. As Gorton (2010, p. 123) expressed this at the time:

> It is not clear whether the housing price bubble was burst by the ability to short the subprime housing market or whether house prices were going down and the implications of this were aggregated and revealed by the ABX indices. As discussed below, the indices were the sole source of information for marking-to-market. It seems that the indices played a central informational role.

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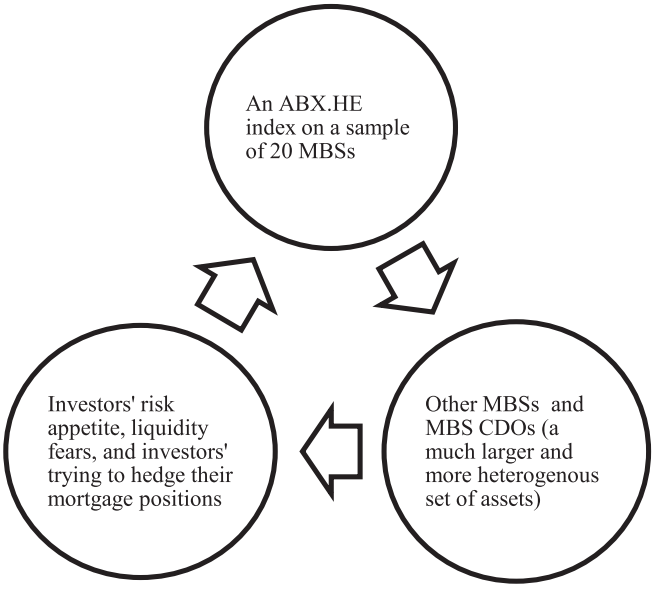

Fig. 2. Self-referentiality between prices for individual MBSs and the ABX.HE indices in the financial crisis.

3.3. Failure to recognise the deferred nature of accounting

In the above we have described the self-referential assumptions that informed the construction and rating of MBSs and MBS CDOs, and have explained the subsequent synchronous effects caused by the use of the ABX.HE index to mark-to-market a much wider and more heterogeneous set of assets at a particular reporting date. The rise and subsequent fall of the market prices of MBSs, MBS CDOs and CDSs, itself offers a vivid illustration of Derrida's notion of *différance*; how the meaning of accounting signs is always also deferred and hence changes over time. Before the crisis, the 'horizon' of these products, based on estimates of their future cash flows, was merely mirrored by fair value measurement. But as we have described, this turned out to be very different from the future that was 'to come', as the use of the ABX.HE amplified losses across a much wider spectrum of products. From a realist perspective accounting is more than able to capture such temporal change; indeed the whole purpose of accounting is to provide a temporal record of such changes in value. However, realism reads such change as a change in the value of the underlying economic phenomena over time, such that, at any moment in time, meaning is wholly present in the relation between accounting representations and economic phenomena. For Saussure and Derrida, however, change has its roots only in the play of difference between accounting signs.

We come here to what is arguably the most pernicious aspect of faith in a realist view of 'faithful representation'. The 'objective mirage' encourages us to believe that meaning inheres in the referent rather than the play of difference between accounting signs over time. Such belief has a dual effect; it encourages the user to take individual accounting signs at face value and attach too much weight and credence to them – notably profit and loss – as if meaning is fully present in the relation between signs and reality. At the same time, it encourages the user to ignore, or fail to take into account the differential relations to other signs from which the always deferred meaning of a particular sign actually derives. In a sense the whole of the financial crisis can be read as an object lesson in *différance*; the inescapable play of difference over time between accounting signs. With the wisdom of hindsight, it was evident that, within institutions, there was often a neglect of the cumulative but spatially dispersed effects of different trading strategies in compounding risk. On an even wider spatial horizon, the correlation between the strategies of different institutions and the systemic vulnerabilities these were creating had also been ignored in favour of a myopic focus on immediate institutional self-interest. Here, however, we want to focus on the temporal interactions of accounting signs both within and between institutions over time, reflected during the crisis in the accusation that fair value accounting was feeding a self-fulfilling and destructive pro-cyclicality.

In their defence of fair value accounting during the crisis Laux and Leuz (2009) argued that both US GAAP and IFRS had at least three mechanisms in place to avoid the pro-cyclicality of accounting. Firstly, accounting standards disallowed the use of fire sale prices to value financial assets and liabilities. Secondly, standards permitted deviation from fire sale prices by requiring firms to employ less reliable Levels 2 and 3 inputs. Thirdly, fair valued assets could be reclassified and measured at amortised cost. However, as we will explain below, deviation from fire sale prices did not prevent the pro-cyclicality of accounting during the crisis. In practice, whilst the ABX indices played a central role in triggering downward spirals in asset prices, these effects were then further amplified by the ways in which accounting numbers were taken at

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face value and interacted with other accounting-dependent market mechanisms and regulations. There were a variety of channels through which these effects flowed. One channel arguably helped to create the conditions for the crisis – the interaction of accounting and remuneration practices. Only with the wisdom of hindsight were these effects recognised; after the event, accounting-dependent bonus structures that rewarded staff immediately for the assumption of much longer term risk were seen to have been key in inflating asset prices prior to the crisis.[10] As the UK Turner Review subsequently observed:

> The bank and near-bank system in total holds a net long position in those assets which are marked to market. As a result, if irrational exuberance pushes the price of assets to irrationally high levels, mark to market accounting will swell declared profit in an unsustainable way. A significant element of trading book profits recorded in the years running up to the crisis proved in retrospect illusory. These illusory profits were however used as the basis for bonus decisions, and created incentives for traders and management to take further risk. (Turner, 2009, p. 47).

Once the crisis started to unfold, two further channels served to amplify the effects of accounting write-downs recorded using the ABX indices. The first was the interaction of accounting with credit ratings. As the crisis began to unfold, Moody's Investors Services, Standard & Poor's, and Fitch Ratings all began to re-rate MBSs and MBS CDOs. Part of the demand for the senior tranches of these securities came from investors who were only allowed to hold investment grade securities. The re-rating required that these investors sought to dispose of such assets in a market that was already declining.

Another key channel for pro-cyclicality was the capital adequacy requirements of Basel II. As prices declined and off-balance-sheet assets had to be brought back onto the balance sheet, this created an urgent need for banks either to re-capitalise and/or dispose of assets. Many institutions disposed of securities at fire sale prices in order to remove the perceived taint from their balance sheets (Ryan, 2008). Banks, in particular, were forced to sell in order to meet their Tier 1 and Tier 2 regulatory capital requirements (Kothari & Lester, 2012, p. 348). These pro-cyclical fire sale prices then became relevant to other institutions in their attempt to mark assets to market during the crisis (Allen & Carletti, 2008; Plantin, Sapra, & Shin, 2008). As Gorton (2010, p. 132) summarised these effects at the time:

> In the current situation, partly as a result of GAAP capital declines, banks are selling assets or are attempting to sell assets – billions of dollars of assets – to clean up their balance sheets, raising cash and deleveraging. This pushes down prices, and another round of marking down occurs, and so on. This downward spiral of prices, marking down - selling - marking down again, is a problem when there is no other side of the market, as has been often noted of late.

A further twist was given to such 'death spirals' when the now vigilant rating agencies began re-rating financial institutions in the face of their deteriorating balance sheets, feeding yet further falls in their market capitalisation.

In the above we have sketched three of the core channels through which accounting signs interacted with related regulatory and market mechanisms. Such channels for pro-cyclicality clearly demonstrated the interaction of accounting with other accounting dependent systems, and became a major source of criticism of fair value accounting in the early stages of the crisis (e.g. American Bankers Association, 2010; Financial Stability Board, 2009; International Monetary Fund, 2008). In response, the FASB (2009b) insisted that such effects were generated elsewhere, and that the role of accounting was merely to passively represent these 'underlying' economic realities. The Saussurean position is that accounting representations inevitably interact with reality given their arbitrariness. During boom times, asset write-ups under fair value accounting encourage financial institutions to increase leverage, which renders the financial system more vulnerable to a crisis. Prior to the financial crisis, for example, asset write-ups in CDO markets led to major increases in the use of leverage: around 12–1 for banks, 30–1 for investment banks and as high as 60–1 for some of the more exotic CDOs (Roberts & Jones, 2009, p. 861). During bust times, asset write-downs encourage financial institutions to sell assets at fire sale prices to decrease leverage, which triggers further downward revaluation and fire sales in a vicious circle (Adrian & Shin, 2008; Matherat, 2008). On 13 October 2008, the IASB (2008) published an amendment to IAS 39 that allowed firms to reclassify illiquid financial instruments to held to maturity and thereby escape the requirement to fair value. At least tacitly, this acknowledged the participation of accounting representations in the crisis, but in doing so stopped the amplification of losses through the ABX.HE.

The dynamics of pro-cyclicality inevitably played out differently for different institutions. Here we will briefly touch on just one prominent example; the collapse of American International Group (AIG) at the height of the financial crisis in September 2008. AIG was an international insurance company that, in addition to its general and life insurance businesses, had asset management and financial services divisions with $1 trillion in assets. As late as March 2008, the President and CEO had assured shareholders of AIG's strength by highlighting its 2007 net income of $6.2 billion (AIG, 2007, p. 2). Less than seven months later, however, AIG announced that it was facing losses of some $50 billion; its share price had fallen more than 90% from over $70 per share in mid-2007 to $1.25 per share in September 2008. Judged a 'systemically important' company, the Federal Reserve quickly organised a bailout of $85 billion in September, which was extended by a further $37 billion in October and another $40 billion in November. Its overall losses during 2008 were

[10] The Saussurean analysis here helps us understand how accounting (notably profit) which was taken at face value and tied to bonus schemes shaped motivations and opportunities for easy lending and fraud, part of the contributing factors to the financial crisis. Of course, there are other reasons for easy lending and fraud on which a Saussurean perspective sheds little light, such as lax regulation.

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Table 2
AIG's notional amounts and unrealised market valuation loss of the super credit default swap portfolio by asset classes as at 31 Dec 2007.

	Notional amount (bn)	Unrealised market valuation loss (m)
Corporate loan	$230	$
Prime residential mortgages	149	–
Corporate debt/CLOS	70	226
Multi-sector CDO	78	11,246
Total	$527	$11,472

Source: AIG (2007, p. 122).

some $93.3 billion, of which some $21 billion was due to losses from its securities lending business, and some $33.9 billion from losses from its CDS operations (AIG, 2008, p. 194).

Under the terms of a CDS, collateral flows back and forth between the parties as market values change. In this way, as the crisis began to unfold, what had been a profitable and seemingly risk remote source of income for AIG turned into a major source of losses as its counterparties marked to market the super-senior tranches of MBSs and MBS CDOs that AIG had insured via CDSs. Table 2 reports the notional amount of protection outstanding on the super-senior credit default swap portfolio by asset classes AIG had on December 31, 2007. Unfortunately for AIG, the multi-sector CDO pools included exposure to US subprime mortgages. As Table 2 indicates, defaults of subprime mortgage loans led to massive write-downs in AIG's multi-sector CDO CDSs. As these massive write-downs occurred, AIG faced more and more cash collateral calls from its counterparties. It reported a loss on its CDS of $11.5 billion in 2007 (AIG, 2007, p. 83), which in turn led to further downgrades to AIG's own credit rating and share price, which in turn intensified the collateral calls. It was AIG's inability to meet such collateral calls that finally triggered the necessity for its rescue in September 2008. At this point it owed $11.4 billion to its counterparties, including $10 billion to six major banks.

There is one final twist in the AIG story that possibly offers some explanation for why its staff had been so willing to take the apparent profitability of MBSs, MBS CDOs, and CDSs at face value. On March 16, 2009, largely as a result of investigations by the New York State Attorney, Andrew Cuomo, it emerged that staff in the financial services division that had largely been responsible for the above losses and the subsequent tax payer funded rescue of AIG, were nevertheless going to receive bonuses of some $165 million (New York Times, 2009). As at many other financial institutions, staff had strong financial incentives not to consider the deferred nature of earlier accounting profit signs, since they had profited immediately from doing so.

In the above we have suggested that the collapse of difference in accounting signs, the widespread and self-interested failure to take account of the deferred nature of accounting representations, and the subsequent pro-cyclical dynamics created by the interaction of accounting with other accounting dependent regulatory and market mechanisms, were key to accounting's participation in the financial crisis. In the final part of this section we want to explore how these effects were compounded by ambiguity and uncertainty as to how fair value measurements should be conducted.

3.4. The heterogeneity of accounting representations

In Saussurean terms, accounting representations, despite their ontological arbitrariness, can still be meaningful if they are not socially arbitrary; as long as they are applied similarly by all preparers. In what follows we explore how the three-level hierarchy of measurement prescribed by SFAS No. 157 had the effect of creating social arbitrariness, thereby endangering the accounting system and general consensus among measurers.

Despite the intention of SFAS No. 157 to clarify the processes of fair value measurement, the crisis revealed a whole range of different ways in which its practical application was plagued by uncertainty and ambiguity. While the three-level hierarchy of SFAS No. 157 was clear in its designation of the different, more or less reliable, bases of measurement, confusion emerged as to the conditions under which firms could or should move from one level to another under changing market circumstances. One key issue here concerned whether a sale was an orderly transaction in a dislocated market or a forced transaction (e.g. a forced liquidation or distressed sale). Conceptually, an orderly transaction is 'a transaction that assumes exposure to the market for a period prior to the measurement date to allow for marketing activities that are usual and customary for transactions involving such assets or liabilities; it is not a forced transaction' (FASB, 2006, para.7). However, during the crisis, when the MBS and MBS CDO market was becoming increasingly inactive and many sales occurred at much lower prices, firms found it hard to judge whether a sale price was a price in an orderly transaction or in a forced transaction. While some firms shifted to complex and forward-looking Level 3 inputs, other firms continued to measure MBSs and MBS CDOs at market prices. As the FASB (2009a, para. 17) later acknowledged, 'The determination of whether a transaction is orderly (or not orderly) is more difficult if there has been a significant decrease in the volume and level of activity for the asset or liability'. As the crisis unfolded, the FASB issued Financial Staff Position (FSP) No. FAS 157-3 (FASB, 2008) in October 2008 and FSP No. 157-4 (FASB, 2009a) in April 2009 in an attempt to clarify the determination of an inactive market and an orderly transaction. While giving priority to

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observable inputs, the effect of this guidance was to allow firms to disregard irrelevant observable inputs and to introduce unobservable inputs (Bougen & Young, 2012).

As the FASB permitted entities more use of Level 3 measurement, this introduced a further source of heterogeneity because firms had to rely on their own proprietary cash flow modelling to value MBSs and CDOs backed by subprime mortgage loans. Under the requirements of SFAS No. 157, 'unobservable inputs should reflect the reporting entity's own assumptions about the assumptions that market participants would use in pricing the asset or liability' (FASB, 2006, para. 21). In practice, it was nearly impossible to make assumptions about the assumptions market participants would make in times of illiquidity. In the words of Ryan (2008, p. 1626), 'during the subprime crisis preparers have found it difficult to convince auditors and others of the reasonableness of internally generated measurements, because numerous fire sales by illiquid firms or capitulations by firms wanting to remove the perceived taint from their balance sheets have occurred at lower values'. As Robert Herz concluded in his testimony to the House of Representatives Sub-committee on Capital Markets in March 2009:

> We understand that determining fair value in illiquid markets can be challenging and requires significant analysis and judgment to accomplish. To the extent legitimate issues are raised about our standards, we pledge to continue to work with our colleagues in the financial reporting and regulatory system to examine and address those issues. (FASB, 2009b, p. 21)

In the above we have suggested that, despite the intentions of SFAS No. 157, in practice the complexity of the fair value hierarchy was such that, as the crisis unfolded, it introduced new sources of heterogeneity into accounting representations. Here we have focused on just two of these: the difficulty, if not impossibility, of determining the exact moment and conditions under which a sale was an orderly transaction or a forced transaction in a dislocated market; and the significant discretion and hence heterogeneity that mark-to-model in practice introduced to Level 3 measurements.

What was the effect of such uncertainty and ambiguity as to the application of fair value accounting? For preparers, it inevitably had the effect of introducing heterogeneity into corporate reporting as different firms made different judgements as to when distressed prices reflected an illiquid market and used different assumptions in seeking to develop mark-to-model valuations. For users, such heterogeneity inevitably had the effect of undermining confidence in reported results insofar as it cast doubt on their comparability. Such effects were particularly intense in relation to the use of Level 3 measurements. The intention of Level 3 measurements was to allow the calculation of an exit price in the absence of an active market. However, the use of mark-to-model again made measurement dependent on the discretion and judgement of management and thereby resulted in the use of different models and model assumptions. As Cooper (2015, p. 77) puts it, 'Mark to model accounting could perhaps be more realistically described as "mark-to-myth" accounting'. At a time of falling market prices this then fed the paranoid suspicion that firms were using Level 3 measurements to conceal losses.

Overall, the effect of increasing the heterogeneity of reporting was to shake confidence in the 'objective mirage' created by accounting just when it was seemingly needed most. Insofar as accounting is believed to make the 'truth' visible, this was a moment when it was arguably highly undesirable to lose faith in accounting's ability to faithfully represent. However, from a Saussurean perspective, faithful representation is simply impossible and, instead, the loss of faith in accounting arose simply from the introduction of new sources of heterogeneity into accounting representations. Heterogeneity introduced doubts, both real and imagined, about the reliability of accounting representations. Since everyone depended upon such accounting to see and respond to the crisis, the market was thereby exposed to a new level of known unknowns, as well as to the possibility of unknown unknowns, without any obvious means of recourse. As Clerc (2008, p. 24) described these effects:

> The direct consequence of this uncertainty regarding asset valuation has been a general distrust between counterparties. This distrust has already resulted in: a breakdown in the most liquid markets, such as commercial paper markets since August 2007; a durable impairment in the functioning of the inter-bank markets; growing concerns about the accuracy of the results disclosed by big financial institutions, leading to increased volatility in financial companies' share prices and to a significant and durable tightening of their funding conditions.

4. Conclusions

When Jameson (1991) writes of an 'objective mirage' produced by representation, he is pointing to what is perhaps an inevitable effect of living within a shared language community. The effect produces something like a 'correspondence' view of representation, in which meaning seems to inhere not in the play of difference between signifiers but rather in the referent. As a consequence, representation appears as a seemingly passive, reflective process that does no more than mirror phenomena that have an independent existence beyond it. The prominence given to the 'faithful representation' of 'economic phenomena' within the current conceptual framework seems only to echo such realist assumptions in relation to accounting representations. Yet, as described in the introduction, the term 'reliability' was replaced by 'faithful representation' in order to allow the inclusion in financial statements of fair value representations some of which depended on a new, opaque, and very different 'apparatus of production'; non-verifiable, model-derived forward

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estimates. In the financial crisis, critics argued that these fair value accounting representations were no longer representing 'true economic value' but instead causing or at least severely exacerbating the crisis. In this paper we have drawn upon the semiotics of Saussure and Derrida in order to develop our own analysis of how accounting participated in the financial crisis.

Taken together, Saussure and Derrida usefully pick apart the fabric of representation that produces the 'objective mirage'. The first move is Saussure's insistence on the arbitrary nature of the relationship between sign and referent, and with this his insistence on the differential and relational nature of signs. Whilst in this way Saussure seemed to exclude all possibility of correspondence, subsequent critics have suggested that he nevertheless seemed to continue to privilege the signified over the signifier. It was only Derrida's introduction of his notion of *différance*, with his insistence that to differ is also always to defer, that the play of difference between signifiers can be seen to produce the signified. The implication, however, is that the meaning of a sign is never wholly present, but instead open to future modification. The financial crisis offered a very vivid set of experiences of just this as MBSs, MBS CDOs, and CDSs swung rapidly from profit into loss; the alluring profitability of these products was suddenly pronounced to have been 'illusory'. That much of the debate during and since the crisis has focused on the question of whether fair value accounting did or did not *cause* the crisis somehow misses the point. As a key mediator in almost all economic relationships, accounting representations must inevitably be understood as participants in the construction of 'economic' reality. The more relevant question that we have sought to explore in this paper is rather the *how* of fair value accounting's participation in the crisis.

Drawing on Saussure and Derrida we have explored accounting's participation in the crisis along three different dimensions. The first of these concerned the way in which the origination and subsequent valuations of MBSs, MBS CDOs and CDSs had the effect of collapsing difference between accounting signs. Here we have suggested that the fair value hierarchy did not, in fact, reflect practice in this area. Whilst Level 3, mark-to-model is judged the least desirable valuation method, and is only permitted in the absence of Level 1 or Level 2 derived market values, in practice, at origination, credit derivatives were model derived, and their modelled profitability, as this was initially reflected in market prices, was what then fed demand. This is one way, we have suggested, that there was a *collapse of difference* in accounting signs. In contrast to Macintosh et al. (2000), however, we have suggested that such 'self-referentiality' encountered its limits as default rates began to exceed modelled assumptions. We have suggested that accounting then played a key role in a different form of self-referentiality. Rather than subject individual prices to the discipline and authority of a wider set of market valuations, the use of the ABX.HE at the height of the crisis meant that a small sample of MBSs was used to value a much wider and diverse range of assets. Again, following Saussure, we have suggested that this served, in effect, to collapse difference between accounting signs.

A second way in which accounting participated in the crisis, we then traced to the ways in which the fair value hierarchy introduced new and unwelcome sources of heterogeneity into measurement practices and, in this way, undermined the coherence of accounting representations. The three-level measurement hierarchy was designed to cope with different market states whilst preserving accounting's ability to either reflect or itself inform users of the 'exit price' (Young, 1996). In practice, however, as we have described above, what was seemingly unanticipated was the ambiguity the hierarchy introduced for preparers and users alike as to quite when it was appropriate to move from one level to the next. This ambiguity itself resulted in different choices both as to when to use Level 2 or Level 3 measurements, as well as the use of different assumptions to derive Level 3 measurements. Both served as new sources of heterogeneity that undermined the coherence and hence comparability of accounting representations at a critical moment of the crisis. This in turn fed into fears that preparers were using this ambiguity to hide losses (Richard, 2015); a fear that was intensified when, under intense political pressure, accounting standard setters allowed the reclassification of these assets out of fair value.

Our third point of focus in the above has been to explore the implications of Derrida's notion of *différance* and, in particular, his insistence that the meaning of a sign is never wholly present but always deferred. It is only from within the realist assumptions of a 'correspondence' theory of representation that accounting can be imagined merely as the mirror of relationships between economic phenomena, rather than understood as itself performative. If meaning lies in the play of difference between signs over time, then accounting is unavoidably a *participant* in creating economic reality rather than its passive observer. In the above we have focused on just three of the most consequential ways in which fair value accounting signs interacted with other accounting dependent regulatory structures; remuneration practices, credit ratings, and capital adequacy rules. However, accounting's manufactured signals of first profit and then loss arguably played a key mediating role at every point in the sale, packaging, and distribution of MBSs, MBS CDOs, and CDSs. Long before the 'crisis', accounting was key in signalling profitability at every node of this new 'pass through' system of mortgage origination and securitisation (de Jager, 2014). It was arguably these signals that in part stimulated the financial innovation involved in the creation of CDOs in both their cash flow and synthetic forms, which in turn fed the demand from banks and investors for mortgages fed by predatory lending to subprime borrowers. Likewise, when the crisis hit, it did so in the form of the sudden inversion, driven by fair value measurement, from profit to loss, which in turn drove an infinite array of consequences: house price declines, dramatic downgrading by the rating agencies, fire sales to meet capital adequacy rules, hedging attempts, the re-casting of accounting regulations etc.

As Ronen (2008) observes, the derivative products at the heart of the financial crisis were 'funny' assets that had the potential to become liabilities, and indeed acquired value primarily in the way that they seemingly offered insurance against such a possibility for buyers of protection, or a seemingly risk-remote revenue stream to sellers of such protection. The particular attraction of CDOs and CDO referenced CDSs was that, through the magic of the 'credit enhancement' realised through tranching, lower rated securities could be transformed into much more profitable AAA

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rated securities. Here, however, Derrida's distinction between what he calls the 'horizon' – the future conceived and seemingly annulled through discounting future value to the present – and the future 'to come', which is always other than what is anticipated, seems particularly pertinent to understanding the actual performance of these products. This distinction, we want to suggest, has important parallels with the Knightian (1921) distinction between 'risk' and 'uncertainty'. Knight identifies two forms of risk where the horizon of the future is indeed reliably predictable; what he calls 'a priori probability' and 'statistical probability'. However, he then draws a sharp distinction between such calculable risk and the use of 'uncertain estimates'. Profit, he suggests, arises from such uncertainty: 'out of the inherent, absolute unpredictability of things, out of the sheer brute fact that the results of human activity cannot be anticipated and then only in so far as even a probability calculation in regard to them is impossible and meaningless' (Knight, 1921, p. 311). As a number of writers (e.g. Appadurai, 2011; Janeway, 2006) have recently observed, the importance of the distinction between calculable risk and brute uncertainty has somehow been lost with the development of financial economics; as Bhidé (2010, p. 105) describes this, 'assumptions of universal omniscience about probability distributions and the absence of Knightian uncertainty are at the heart of many breakthrough models'.

The anticipation of future cash flows and their discounting to a present value, and then subjecting this value to assumed default and correlation assumptions, was essential to the production of fair values for CDOs and CDO referenced CDSs. However, this can only ever have the form of what Derrida terms an 'horizon' – the pre-comprehension of the future in the present – and will always be other than, but seems to annul, the actual uncertainty of the future 'to come'. In this respect we want to suggest that fair value accounting is not only essential to such calculations of risk, but also incapable of representing the uncertainty that may be attached to these. The invocation of 'faithful representation' only compounds this tendency. As Erb and Pelger wryly note, fair value 'explicitly allowed uncertain information to be representationally faithful as long as the degree of uncertainty was disclosed' (2015, p. 29). The footnoted disclosure of uncertainties alongside seductively concrete fair values arguably fails to and indeed simply cannot represent uncertainty, but rather reinforces the sense that uncertainty has been reliably transformed into calculable risk.

The increased dependence of financial reporting on forward estimates, at all levels of the measurement hierarchy, is, of course, the consequence of the reorientation of reporting to investor usefulness, whose future orientation it seeks to mirror. In a spirited defence of fair value, Barth (2006, p. 273) argues that it is widely understood that fair values are based on forward estimates. But of course, fair value goes further than the mere estimation of future cash flows, for these are then discounted into values that can be recognised in the present. Discounting the 'horizon' of the future to the present does nothing to remove the uncertainty of these forward estimates. But transforming this into an exclusively present value, as if the horizon of the future can be made fully present, and then allowing the recognition of such gains in the present on the basis of their anticipation, both attaches too much certainty to the horizon of future estimates, and then turns this into a seemingly unambiguous calculation of recognisable present value. So, either the future does not exist in fair value accounting – all that exists are present estimates of a future that will always be different from the future that actually comes – or the uncertainty of the future 'to come' must somehow be more fully acknowledged.

A greater reliance on fair values was promoted in part on the grounds that it removed reported values from the self-interested influence of managers and accountants, and yet it can also be seen to have provided a host of new opportunities for immediate profit-seeking by investor agents. The practice of discounting is typically justified on the basis of arguments about the time value of money; as an investor I would prefer money today rather than in x years' time, since this allows me to use that money productively in the interim. But we suggest that this logic cannot be extended to the *recognition* of unrealised future value in the present. Recognising the future in the present takes the risk out of investing, or rather allows it to be passed on to unwary others either directly or in the form of some future taxpayer funded bailout. As Zhang and Andrew (2014, p. 24) argue, 'the inevitable uncertainty involved in the pricing process has been oddly neglected in much of the FVA debate, let alone the FASB/IASBs CF project' and 'enables key financial actors to transfer risks to other actors in a way that is substantially hidden'.

In a provocative essay titled 'The ghost in the financial machine', Appadurai (2011, pp. 524–525) suggests that modern finance is to be understood not as risk management, but as the exploitation of risk: 'the world of financial risk, and its numerous emerging instruments and devices, is in fact nothing other than an enormous set of tools, a technology, for the mapping and measuring of risk, not to manage it but rather to *exploit* it'. As we have described above, in part the inherent uncertainty of CDO valuations was managed through narratives of credit enhancement and risk dispersion. However, we suggest that fair value accounting was also key to this 'framing' of uncertainty (Beunza & Garud, 2007). Only their apparent profitability provided the engine for the rapid growth in issuance of CDOs, as well as further product innovation such as synthetic CDOs, along with the escalation of the marketing of subprime mortgages as supply struggled to keep up with investor demand. The claim as to the faithfulness of fair values arguably only fed the frenzy. Yet as we have also described above, in practice this 'illusory' profitability depended almost entirely on complex and ultimately flawed modelled assumptions, such that these derivative products themselves became the engine for systemic risk. Absent its footnotes, financial reporting was necessarily coy about the uncertainties masked by the apparently exact fair values it produced. The seeming promise of the calculations it allowed was the more effective management of risk, but perhaps this is better seen as a veil of reassurance that allowed others to exploit these seductive certainties. By allowing the recognition of unrealised future value in the present, standard setters had inadvertently created a positive incentive for such exploitation. Fair value, and its claim to faithfully represent, then appears as a way in which in the financial crisis issuers were able to exploit the mirage of objectivity that financial accounting produced. In her analysis of the role

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of accounting in the crisis, Cooper (2015, p. 78) suggests that one practical solution would have been 'to put any monies due in the future as (non-discounted) liabilities whilst not recognising future cash flows until they arrive'. Taking the immediate financial incentives out of the use of forward estimates in this way might have done much to weaken the allure of credit derivatives, and with it allowed accounting to participate much more skilfully in the dynamics that led to the financial crisis.

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